Oral Cancer- Improving Early Detection

GDC Recommended Subject

**Aims:** To give an overview of the dental team’s role in detecting the early signs of oral cancer; to give an overview of the risk factors associated with oral cancer; and, to discuss some oral lesions which may indicate the need for a referral for further investigation using the National Institute of Clinical Excellence (NICE) Guidelines.

**Objectives:** On completion of this verifiable CPD article the participant will be able to demonstrate, through completion of a questionnaire, the ability to:

- Recognise the role of the dental team in detecting the early signs of cancer or pre-cancer.
- Identify patients that may be considered to be at an increased risk of oral cancer.
- Identify the potential signs and symptoms of oral cancer.
- Know the criteria for referral following the National Institute of Clinical Excellence (NICE) Guidelines.

**Introduction**

Over 6000 people are diagnosed with oral cancer each year which accounts for over 2% of new cases of cancer in males and over 1% of all new cancers in women.\(^1\)

Early detection and treatment can improve survival rates.\(^2\) It has been reported that 82% of patients with oral cancer may reach the five year survival rate if their oral cancer is detected early, compared with only 27% for those whose cancer has spread to the rest of the body.\(^3\) However, although there has been some improvement in the five year survival rates for oral cancer, research shows that the improvement is not significant amongst the most deprived patients.\(^4\)

In 2011, the General Dental Council received a letter from the British Society for Oral Medicine (BSOM) reporting that the incidence of oral cancer had risen by 41.2% in a decade, and that due to its rarity it may be overlooked by the dental professional. The BSOM advised that oral cancer detection should be added to the list of ‘core’ subjects that dental professionals should undertake as part of their Continuing Professional Development (CPD). This view was subsequently reinforced by other sources such as Cancer Research UK and the British Association for the Community of Dentistry, who also reinforced the importance of early detection and recognising potential risk factors for oral cancer as well as the importance of dental professionals being aware of referral pathways.
In May 2012 the General Dental Council added Oral Cancer-Improving Early Detection to the list of recommended subjects that dental care professionals should undertake as part of their CPD.\(^5\)

This article will discuss the risk factors associated with oral cancer, the importance of checking the oral cavity for potential malignancies, and when to refer a patient for further investigation following the NICE guidelines and recommendations from Cancer Research UK.

**The Role of the Dental Team**

The patient should be given a thorough head and neck examination at each dental appointment. In addition, the patient's, medical history will need to be updated at each visit. It is recommended that the clinician should:\(^6\)

1) **Take a History Which Will Help Identify the Risk Factors for Oral Cancer**

At every examination the patient should be thoroughly examined for potential malignancy. The examination appointment gives the dental team the opportunity to question the patient about their lifestyle to ascertain whether they are at a higher risk of developing oral cancer. Cancer Research UK advise that a high level of suspicion is required when assessing patients for oral cancer, but that many other conditions may present with similar changes. Early oral cancers and precancerous lesions are often subtle and asymptomatic.

The level of suspicion should be higher if a patient has been identified as being at higher risk.\(^7\) The following are considered to be risk factors:

- **Age**- The incidence of oral cancer is strongly correlated to age. Oral cancer in men increases sharply at aged 45 and peaks around ages 60-69 before falling in the over 70's. Women experience a more gradual increase from age 45 before peaking in the over 80's. The cancer research UK statistics demonstrated that, between 2007 and 2009, 44% of oral cancer cases diagnosed were in individuals aged 65 and over.\(^1\) However, there is evidence emerging that oral cancers are occurring more frequently in the younger age group (under 40).\(^13\)

- **Gender and Ethnicity**- The incidence of oral cancer is highest in men. In the 55-59 year age group, oral cancer incidence rates are almost three times higher in men than women.\(^1\) Ethnic background is also known to influence many types of cancer.

- **Tobacco/Alcohol use**- The use alcohol and tobacco (including smoking, snuff and chewing tobacco) are regarded as major risk factors for oral cancer. The World Health Organisation state that "the population attributable risks of smoking and alcohol consumption have been estimated at 80% for males, 61% for females, and 74% overall."\(^8\)
• **Human Papillomavirus (HPV) and Weakened Immune System** - Evidence suggests that infection with high-risk HPV increases the risk of oral cancer. In the UK, it has been estimated that 8% of cancers of the oral cavity, and 14% of cancers of the oropharynx, are linked to HPV infection. Oral cancer has been shown to increase in individuals who have undergone organ transplants. In addition, HIV/AIDS related cancers such as Kaposi Sarcoma and Lymphoma may indicate an association between immune suppression and oral cancer.

• **Past History of Cancer** - Individuals with previous oral and pharyngeal cancer have a much greater risk of a second diagnosis and this risk remains high several years after the first diagnosis.

• **Sun or UV Light Exposure (lip cancer)** - It has been reported that there is limited evidence available for the association between sun or UV light exposure and the incidence of lip cancer. The association may be indicated due to the higher incidence of external lip cancer on the lower lip, rather than the inner lip (which may be tobacco related).

• **Poor Diet** - It has been reported that a diet low in fruit and vegetables may play a role in oral cancer development.

2) **Conduct a Oral Examination**

An exam procedure which has been extracted from the standardised oral examination recommended by the World Health Organisation can be found in the non verifiable CPD section of the website. This document gives a detailed account of the recommended examination which should take no more than five minutes.

The following table briefly shows the components of an oral cancer examination:

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<td><strong>1. Extra oral examination:</strong></td>
<td>Examine the head and neck and palpate the lymph nodes.</td>
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<td><strong>2. Examine the lips:</strong></td>
<td>Note colour, texture and any surface abnormalities.</td>
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3. Labial and Buccal Mucosa: Note colour, texture, swellings or other abnormalities.

4. Alveolar ridge and gingiva.

5. Tongue: Inspect the ventral and dorsal surfaces of the tongue and the lateral borders. Palpate the tongue.

6. Floor of the mouth: With the tongue elevated, examine the floor of the mouth for changes in texture, swelling, colour or other abnormalities.


8. Soft palate and oropharynx.

Recent clinical diagnostic tools have been developed to aid in the early detection of oral cancer. Toluidine blue (vital staining) may be a useful adjunct to a clinical examination. It has been recommended for use as a mouthwash or for direct application on suspicious lesions. The die binds to dysplastic or malignant cells. Other diagnostic tests include oral brush cytology, chemiluminescence (ViziLite™), salivary diagnostics and various imaging devices.  

3) Follow Up

A follow up is required to ensure that a definitive diagnosis is obtained on any possible signs or symptoms of oral cancer. A thorough oral examination is imperative for earlier, symptomless lesions. However, the gold standard for diagnosis is a biopsy and histopathologic examination.  

Signs and Symptoms of Oral Cancer

A common sign of a potential malignancy that a patient may report is an ulcer that is not healing. The most common sites for oral cancer are the tongue, lip and floor of the mouth.  

Carcinomas account for about 96% of oral cancers. The most common type of oral malignancy, which accounts for approximately 9 out of 10 oral cancers, is the squamous cell carcinoma. The squamous cell carcinoma develops from the stratified squamous epithelium which lines the mouth (figure 1).
The early signs of premalignant changes of the oral mucosa may present as either leukoplakia (white patches) or erythroplakia (red patches).

**Leukoplakia** was first defined by the World Health Organisation as “a white patch or plaque that cannot be characterised clinically or pathologically as any other disease.” During an examination, a lesion may be considered to be leukoplakia (Figure 1) if it cannot be attributed to another condition such as lichen planus (Figure 3), candidiasis (Figure 4) or lichenoid reactions.

Leukoplakia reflects a build up of excess epithelial keratin (proteins). Hyperkeratosis of the oral mucosa may occur due to friction such as may be seen on endentulous ridges when the ridge is being directly chewed on. These areas may be called frictional keratosis rather than leukoplakia. Changes in the oral mucosa may also occur as a response to cheek or tongue biting and these changes are not premalignant and are reversed if the irritation is stopped.

Leukoplakia is also produced in response to noxious stimuli such as constant exposure to irritating chemicals and tobacco smoke. Two such tobacco related lesions are nicotine stomatitis and tobacco pouch keratosis.

Initially, leukoplakia appears as an elevated grey/white plaque, but if it progresses it becomes thicker, fissured and has a leathery appearance. Some leukoplakias may
become nodular or develop a papillary surface and are known as verrucous leukoplakia (figure 2). It has been reported that the frequency of dysplastic (alteration in cells) or malignant alterations in oral leukoplakia has ranged from 15.6-39.2%. It is also reported that thicker or verrucous leukoplakia are more likely to show dysplasia or malignancy than thin leukoplakia (figure 2).¹⁹

![Verrucous leukoplakia](image1)

**Figure 2. Verrucous leukoplakia.**

**Lichen Planus** is “a relatively common, chronic dermatologic disease that often affects the oral mucosa.” A variety of medicines may cause lichenoid lesions which are almost identical in appearance to Lichen Planus. Lichen planus may be reticular, where the lines lesions present as white, interlacing lines. Erosive lichen planus still has the white, interlacing lines, but with erythematous areas and central ulceration and is usually symptomatic.²² There has been a lot of debate as to the possible malignant potential of oral lichen planus.²³ However, it has been reported to fulfil the World Health Organisation criterion of a premalignant condition.²⁴,²⁵

![Lichen Planus](image2)

**Figure 3. Lichen Planus.**

**Candida** is a fungus found in normal oral flora; however, “it can proliferate in immunocompromised, malnourished, or debilitated persons.” Pseudomembranous candidiasis (thrush) presents as white plaques but these can be wiped away to leave red patches on the mucosa.²²
Erythroplakia (figure 5) is defined by the World Health Organisation as “A red patch that cannot be defined clinically or pathologically as any other condition.”

Erythroplakia may also have white areas within it (erythroleukoplakia). Although it is not as common and leukoplakia, erythroplakia is much more likely to show dysplastic changes or malignancy.

Aside from leukoplakia and erythroplakia, potential symptoms or oral cancer also include:

- A lump or thickening of the oral tissues
- Feeling that something is caught in the throat
- Difficulty moving the jaw or tongue
- Numbness
- Swelling of the jaw
- Ear pain
- Difficulty with swallowing
- Hoarseness
Recommended Referral Pathway as Detailed in the NICE Guidelines and Cancer Research Referral Guidelines

Referral Details

It is important that certain details are recorded on a patient referral so that a waiting list can be prioritised. The following details are direct recommendations from Cancer Research UK.²⁸

- Patient’s details. This includes the patient’s name, address and telephone number.
- Medical history: Including doctor’s name and contact details.
- Relevant social history: Including smoking and drinking status.
- Detailed description of the lesion including duration, site, size, colour, texture and findings upon palpitation.
- Clinical diagnosis in order to categorise the urgency of the referral.

Urgency of Referral

The NICE Guidelines²⁹ recommend that patients with the following signs and symptoms are referred under the category of urgent referral.

- Any patient with symptoms or signs related to the oral cavity which have been persistent for six weeks or more in whom a definitive diagnosis of a benign lesion cannot be made.
- Any patient who presents with unexplained red and white patches (including suspected lichen planus) of the oral mucosa that are painful, swollen or bleeding (The NICE guidelines recommend that if patches are not painful, bleeding or swollen a non urgent referral can be made).
- Patients with unexplained ulceration of the oral mucosa or mass persisting for more than 3 weeks.
- Patients with unexplained tooth mobility persisting for more than 3 weeks, that cannot be attributed to a dental cause.
- Any patient with hoarseness persisting for more than 3 weeks.
- Patients with an unexplained persistent swelling in the parotid or submandibular gland (salivary glands).
- Patients with unexplained persistent sore or painful throat.
- Patients with unilateral unexplained pain in the head and neck area for more than 4 weeks, associated ear ache but with normal otoscopy (ear examination).
- Patients with an unexplained lump in the neck or a previously undiagnosed lump that has changed over a period of 3-6 weeks.

An urgent referral means the patient is seen within the national target for urgent referrals (currently two weeks).

Cancer Research UK recommend patients with the following signs and symptoms are referred as a prompt referral.

- Lichen planus. (Patients that have already had a diagnosis of lichen planus confirmed should be monitored for oral cancer at examination appointments.)
- White patches with no redness or ulceration.
- Chronic hyperplastic/pseudomembrous candidosis
- Oral sub-mucous fibrosis
- Painful traumatic ulcers
- Recent unilateral salivary gland swellings
- Mucositis

Cancer Research UK recommend patients with the following signs and symptoms may be referred as a general non urgent referral:

- Polyps
- Mucoceles
- Pyogenic granulomas
- Areas of lichenoid reactions
- Amalgam tattoos
- Recurrent oral ulcers

Conclusion

Research suggests that early detection of oral cancer can increase survival rates. The dental team are in a position whereby they can identify potential risk factors and discuss these with patients during the course of preventative care. Each patient should be examined for oral cancer at each dental examination and a high level of
suspicion used to identify early signs of oral cancer. NICE guidelines should be followed when referring patients for further investigation.

**Portfolio Tip**

The full NICE referral guidelines and Cancer Research guidelines are available to access they contain the recommended procedure for oral examination.

Why not spend time conducting internet research about any oral lesion listed above that you are not familiar with?

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References